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-- A polarized input beam 510 from light source 140 is directed into HSPMI 501 via reflector 511. Roof prism 522 is positioned below the plane of the page, such that the input beam to the interferometer passes over it. In some embodiments, the input beam is linearly polarized at 45°, or it can be circularly polarized. Beamsplitter 520 splits the input beam into orthogonally polarized reference and measurement beams. The reference beam is twice directed between mirror 515 and cube-corner retro-reflector 521 before being directed to roof prism 522. Similarly, the measurement beam is twice directed between mirror 540 and cube-corner retro-reflector 521 via measurement distance 530. Following the second pass to mirrors 515 and 540, respectively, cube-corner retro-reflector 521 lowers the reference and measurement beams to the plane of roof prism 522, which causes the beams to make two additional passes to mirrors 515 and 540. Thereafter, the beams are recombined into an output beam, which is directed to quadrature detector 505.--

In the claims:

Please amend claim 32, as follows:

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32. The method of claim 30, wherein the calculation of the frequency transform is based on the monitored frequency tuning.

Please add claims 49-54 as follows.

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-- 49. The method of claim 41, further comprising:
monitoring the frequency tuning with a wavelength monitor.--

-- 50. The method of claim 49, wherein the wavelength monitor
comprises an interferometer.--

-- 51. The method of claim 49, wherein the transformation of the interference signal with respect to the identified peak is based on the monitored frequency tuning. --

-- 52. The system of claim 45, further comprising a wavelength monitor coupled to the electronic controller, wherein during operation the wavelength monitor monitors the frequency tuning.--

-- 53. The system of claim 52, wherein the wavelength monitor comprises an interferometer.--

-- 54. The system of claim 52, wherein during operation the electronic controller transforms the interference signal with respect to the identified peak based on the monitored frequency tuning. --
